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## No. XXVI.—A PHENOMENON OF ELECTRICAL CONVECTION.

BY JAMES JAY GREENOUGH.

Presented June 9, 1880.

WHILE studying the spectra formed by passing a spark from an induction coil through heated media, I perceived that, when the negative terminal consisted of a very fine platinum wire, the passage of the sparks made it glow, and soon fused it. Supposing that the heating effect was due to the resistance offered by the fine platinum wire, I joined the two terminals and allowed the induced current to flow through the circuit uninterrupted. No heating effect was produced. The phenomena is a very marked one, and the incandescence of the platinum gives a brilliant star of light.

This effect seems to be due to the impact of the particles of matter upon the negative terminal, and is related to the electrical convection effects first studied by Prof. Rowland. It can also be termed a Crookes effect under ordinary atmospheric pressure, for the electrified stream of molecules urged with great energy, rebound from the point of the negative terminal, and, being confined by the stratum of gases, expend their *vis viva* in repeated blows upon the terminal, which is raised thereby to incandescence.

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## No. XXVII.—THE EARTH AS A CONDUCTOR OF ELECTRICITY.

BY JOHN TROWBRIDGE.

Presented June 9, 1880.

THE Observatory of Harvard University transmits time signals from Cambridge to Boston, a distance of four miles. The regular recurrence of the beats of the clock at the Observatory affords a good means of studying the spreading of the electrical current from the terminal of the battery, which is grounded at the Observatory; and the establishment of the telephone dispatch companies in Boston and Cambridge, with their various ground connections, gave me unusual means of studying this spreading.

In all the telephone circuits between Boston and Cambridge, and